

Abstract of the Disclosure

In some aspects, the invention provides an apparatus for treating water that has an MF or UF membrane filter located upstream of a downstream reverse osmosis unit. The MF or UF filter provides pretreatment for the RO unit. The feed water to be treated is fed to the MF or UF filter. Permeate from the MF or UF filter is fed to the reverse osmosis unit. The RO unit is thus fed with pre-treated water having a reliably and significantly reduced concentration of suspended solids. Spacers in the RO unit are made thinner than spacers that would be appropriate for use if the RO unit was fed with the water to be treated directly or through a less reliable pretreatment stage. For example, the RO spacers of a spiral wound module may be 15 to 25 mil (381 to 635 microns) thick or 17 to 22 mil (431.8 to 558.8 microns) thick.